

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
12 March 1999 (12.03.99)

International application No.
PCT/GB98/02214

Applicant's or agent's file reference
REP05396WO

International filing date (day/month/year)
24 July 1998 (24.07.98)

Priority date (day/month/year)
28 July 1997 (28.07.97)

Applicant

DENSHAM, Daniel, Henry

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:05 February 1999 (05.02.99)☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference REP05396WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB98/02214	International filing date (day/month/year) 24/07/1998	Priority date (day/month/year) 28/07/1997
International Patent Classification (IPC) or national classification and IPC C12Q1/68		
Applicant MEDICAL BIOSYSTEMS LTD. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand

Date of completion of this report

10.05.99

Address of the international

Authority:

Patent Office

Geneva

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/02214

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-15 as originally filed

Claims, No.:

1-29 as originally filed

Drawings, sheets:

1/5-5/5 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
☒ claims Nos. 23-28.

because:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/02214

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

- ☒ no international search report has been established for the said claims Nos. 23-28.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-22,29.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/02214

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-22,29
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-22,29
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-22,29
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

SECTIONS III & IV

1. The applicant has not responded to the search authorities lack of unity of invention finding and its request to restrict the claims or pay additional search fees (see I.S.A. form 210). Therefore the only claims covered by the International search report are 1-22 and 29. The examination will therefore be carried out on the subject matter of these claims only (Rule 40.1 PCT).

SECTION V

1. The subject matter of the claims (1-22,29) appears to fulfill the requirement of Article 33(2) PCT. It would appear that although D1 (WO91/13666) mentions on p. 2, lines 21-27, that a polymerase was immobilised upon an ion exchange column, it was apparently also immobilised with the primer. Therefore the present subject matter differs from that mentioned in D1 insofar as the primer and target sequence are not co-immobilised with the polymerase.
2. The subject matter of the claims (1-22,29) also appears to fulfill the requirements of Article 33(3) PCT. The present invention is based upon the realisation that the polymerase's conformation/mass changes when a nucleotide is included into the growing chain. Measurement of this change can be detected by immobilising the polymerase upon a sensor designed to detect the said change. The use of conformational/mass change was not taught or hinted at or even used to detect incorporation of nucleotides into the growing chain at all in the prior art disclosed. Consequently the method appears to involve an inventive step.

SECTION VII

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

SECTION VIII

1. The wording of claim 1 is unclear and therefore fails to fulfil the requirement of Article 6 PCT. The wording of the claim, and in particular section (i), is written in

an ambiguous manner such that the skilled person reading the claim is not sure whether the target nucleotide or the polymerase or the nucleotides are individually immobilised or not. It is assumed that only the polymerase is intended to be immobilised as this is apparently the only embodiment covered by the examples.

2. The subject matter of claim 22 fails to fulfill the requirement of Article 6 PCT because it is considered that the subject matter of this claim encompasses polymerases bound to sensors that do not necessarily detect conformational/mass changes. In other words the claim fails to clearly mention the type of sensor to which the polymerase is bound.